How will your project work?

The goal of our project is to measure the intrinsic noise inherent to different promoters that are commonly used both in synthetic biology and in iGEM. In order to ascertain this information we are engineering E. coli to express two different fluorescent proteins (CFP and YFP) both controlled by the same promoter. We are testing both low copy number plasmid expression and genome-integrated expression of the dual-reporter system. This cells are then grown to log phase and imaged using confocal microscopy to determine the amount of variation in the ratio of CFP:YFP fluorescence in the population.

What risks does your project pose at the laboratory stage? What actions are you taking to reduce those risks?

E. coli DH5alpha laboratory strains (BSL 1) are not known to be pathogenic in immunocompetent individuals. However, in order to minimize any risks we take the following precautions:

- Close-toed shoes will be worn at all times in the lab, and gloves whenever working at the bench.
- No food or drink will be allowed in the lab.
- Hands must be washed before leaving the lab area.
- Lab coats will be worn when working with bacterial cultures in excess of 3.0 mL.
- Goggles will be used when working with any caustic reagent or reagents that could readily aerosolize.
- All bench space will be wiped down with 70% EtOH before and after use with BL1 material.
- All unnecessary equipment will be unplugged and removed from bench after use.

How would your project be used in the real world?

Our project is foundational and would only be used in the lab.